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GOOD HEALTH & DENTAL WELFARE

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24 JAN 1927

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BY

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GOOD HEALTH AND DENTAL WELFARE.

A monthly Journal in English for the "Care" of Body & Teeth

Edited by Dr. H. VENKAT RAO, L. M. & S.,

DENTAL SURGEON, MADRAS.

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DIET ANDDISEASE

One of the gratifying features of the Royal Commission on Agriculture is that most of the medical and sanitary witnesses have struck a new line of action in the combating of ill-health and disease. At long last there are signs that the attention of the medical and sanitary department is being diverted away from the "drug", the "drain" and "bad smell" and their activities have been extended to the condition of body long, long before the disease has manifested itself. That this vital aspect of medical relief has hitherto received little or no attention at the hands of the authorities is most deplorable. The neglect of the preventive side of Medicine we have often explained, is the tragedy of medicine. Under the heading "Public Health Schemes and Disappointing Results" we wrote in 1923 in the December ssue of our "Good Health":—

"What with the many a Child Welfare, Maternity, Sanitary, and Drainage Schemes and the puzzled Health Department, many an authority, inside and outside the influence of the official ridden Departments, have recorded their view of despondency to cope with the work and show their value or ability in reducing the high death rate, terrible infantile mortality, low vitality and birth rate as well as in increasing the average life of the Indian. Some blame the masses, their impregnable customs, and religious ideas termed often as superstition. Again others attribute the failure to the lack of money in order to pay for highly paid sanitarians, Sanitary appliances, Baby's Homes, Nursing-centres or Maternity schemes While most again confess that the failure 'is primarily due to the bsence of intelligent co-operation

and sympathetic understanding between the masses and the official guardians of Public Health. Strangely enough, none of these, have yet begun to grasp or discover other factors, which have been contributing to this appalling state of affairs. Immunity or susceptibility also plays a great part in the causation of diseases or ill-health.

The high death rate, terrible infantile mortality, low vitality and birth rate are also due to the result of the so-called civilized condition of human life, far from its primitive state of living on raw leaves, fruits and roots. The artificial ways of living in highly congested areas, unnatural cooking, eating highly boiled foods, partaking of mill and machine made rice and flour of cereals and artificial and Patented foods as well as artificial methods of feeding babies, tell upon health, growth of bone, teeth and body in the young and old, inducing lower resistence of body, prone to infection or disease. Unfortunately, however, otherwise useful medical books and the Press, gratuitously advocate such types of semi-masticated and preserved foods to the babies, sick or healthy.

The milling, high heat of flour mills and the chemicals in the patent foods destroy certain intangible food factors called "Vitamines," which are to be found most in the vegetable kingdom, in milk, in the outer covering of cereals,etc ,but are susceptible to and are lost by high heat, drying and preserving drugs.

Vitamines are said to be absolutely indispensable in carrying on the normal cellular metabolic processes, anabolism and katabolism and act as stimulants or excitors and bear an important part in growth, development and reproduction, in the maintenance of muscular and nerve tone and vigour and in increasing the resistance to infection.' When there is a lack of, or a sub-minimal amount of, these vitamines in food, even though all the necessrry nutritional substances are present, one of the following or more diseases result *viz.* Scurvy, Rachities, Beri Beri, Xerophthalmia, poor development of enamel of teeth and Dental Caries, Pyorrhoea Alveolaris, Diabetes and all sorts of debilitated conditions due to nervous exhaustion, loss of appetite and poor assimilation and poor development with a tendency to infection.

Hence the rapidly changing methods of diet, dining, drinking, dressing, drugging, living, dwelling, reading, resting, marrying and reproduction have greatly to do with th present state of ill-health, disease and short life."

Lt. Col. Mc Carson, in charge of Deficiency Diseases Enquiry at Coonoor, whose careful researches and evidence before the Royal Commission appears elsewhere, bears sufficient testimony to the truth of the above facts as we saw them three years ago. The medical profession has, by now, been set a thinking that diet is one of the, if not the, most important factor in the causation of disease and that, as Dr. Hyder remarked, the deterioration in the health of the present day educated Indian and the incidence of disease is due to fact that they are adopting European ways of living in the

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matter of drinks (aerated waters) and diet (polished rice and so on).

"There is no question of doubt," we wrote in the same issue of our "Good Health" "that the present day educational facilities and its goal put great strain and drain on the system affecting growth and longevity of the school-going classes. The high pitch to which the brain is being worked, the lack of proper, suitable and sufficient nutritional elements in the diet, the absence of proper rest after a hurry bury morning bellyful meal and the uncontrolled and uncontrollable habit of resorting to Coffee Hotels have greatly contributed to the present state of affairs.

Education or brain work heats up the brain and its branches—the nervous system. The blood vessels in them become heated and poisoned; hence require to be cooled and purified. There is no better blood purifier than the fresh outside atmospheric air and that is why the open air schools, schools under the trees are the ideal places of Education, especially for young ones in their growing stage. Like fish out of water, the system of children inside the walls of schools whether well or ill-ventilated find the difference and will also be upset to a greater or less extent, In unavoidable circumstances the children should be frequently and compulsarily brought to open air to oxygenate their poisoned system like breathing fish and must be allowed to have free and easy respirating exercises or practices.

When an organ, as brain, becomes heated due to its exercise or work, the blood from other organs and at the expense of non-working organs tries to flow quicker into it to cool the heated organ. When the stomach is loaded and the digestive processes are on the full swing, as in cases of school-going children at 10 A. M. more blood is thrown round the stomach and the brain, at the highest blood level, receives less of this blood food.

Hence it is that we see that students, sitting before teachers from 10 to 1 P. M. are more or less in a drowsy state. It is therefore not only a question of waste of energy, time and valuable teaching like spilt oil in the sand, but it is highly detrimental to both the organs put in action viz. the stomach and brain.

Stomach troubles and brain fag are thus have their initiation by otherwise useful lectures forced upon an unwilling and unprepared mental faculty. Early hours of the morning with or without a repast of curd rice is healthy and refreshing time for the impartation and imbuing of knowledge easy or hard. The small hours of the evening may be devoted to less difficult subjects as drawing, vocational subjects and gymnastics.

Recreation is as necessary to school-going classes as food and sleep. As much as the brain is worked so the body to be exercised not only to develop it but also to give rest and a past time to brain and the nervous system so as to make them forget tiresome and tedious studies.

The dressings of the boys have an important bearing on the function and the well-being of the individual.

It is more or less scientifically correct to say that a man breathes not only through his nostrils and mouth but also through his 80,000,000 pores in the skin. In fact, skin automatically and sympathetically co-operates and supplements with the work and function of the lungs and kidneys. In a hot country, skin has a further duty of reducing its own temperature which is often above the normal.

It is by perspiration and evaporation that the highly essential and singular function of skin must be kept up all throughout the day and sometimes at night in a tropic place as Madras.

Hence the body wishes and tries to be without any covering which will hinder free perspiration and easy evaporation. Therefore the national Malabar dress cannot be too highly recommended to our school-going classes.

Hence the ensuing ushering in of the new University scheme, presents a rare opportunity to blow up the old clerk-manufacturing Educational machine and build up a healthy, invigorating and indigenous system of soul-lifting and body-developing Educational faculties that will hinder the sapping of the vitality of the young hopes of our Indian Nation, allow the natural forces to build up bone, body as well as brain and put an end to making them body pigmies and perhaps mental giants."

Major Russel, Director of Public Health, whose views we quote in extenso. elsewhere, gives emphasis to the same views and observes that adult education on Health and Hygiene has been neglected as yet and that a great deal must bo done in schools if we are to avoid the disastrous consequences that would otherwise turn upon the future generation.

We are, however, afraid that nothing tangible will result from the labours of the Royal Commission except perhaps that the Indian Government will find an excuse and an opportunity to place large orders for agricultural implements on a foreign company as the Commission have studied the Agricultural defects and grievances of the ryot with the eyes and mouth of the educated non-agriculturists who are against old and tried methods of agriculture and whose bias is strongly in favour of spectacular and grand implements of the so-called improved type. On the other hand, we might have wished that the Royal Commission tried to see and examine the practical agriculturists themselves with knowledge handed down from generation to generation and hear how and why agriculture was flourishing in days gone by and how and why it has deteriorated. Certainly, their attention then might have been drawn to the immediate necessity of providing proper grazing-grounds for cattle, sufficient foliage for manure (which is the source of the vitamine in our foodgrains), proper and sufficient fodder for animals; their faith in improved types of agricultural implements alone much shaken and their zeal for popularizing artificial manures slackened down, since artificial fertilizers like artificial foods are threatening to undermine the health and energy of the soil and crops, upon which depends the health of the nation.

Is Madras City a Death-Trap?

(Continued from last issue)

The Madras city is verily the home of dust, dirt and also disease. As some of our stray dogs are left to stalk about unowned, dust and dirt, uncontrolled and unregulated, is a real menace to the city. If rabid dogs are a danger to public health and safety, so are ill-kept and ill-watered roads, only the danger in the latter case is not apparent at first sight. What makes it worse is the incessant breeze of the city, which not infrequently becoming wild and whirling, raises up the road dust unawares into the eyes and ears of the passers-by and fills the topmost floors of the neighbouring buildings, vitiating the air therein. The dirt of the open dust bin and the rubbish carts and trucks scattered and carried away by the winds infects the pedestrians, houses and conveyances with disease carrying germs of any and every kind. One has but to walk up our roads even for a few minutes to see one's face covered up with a layer of brownish dirt and thus bring home the fact that an equal amount must have penetrated into the lungs or stomach through the eye, ear, nostrils and mouth. One's barefooted leg will be liberally smeared with dust and dirt and in busy quarters even with tar products. The illiterate man has a dread of these tarred roads and if he walks on it bare-footed it is out of compulsion and necessity. The literate man, of course, has no such fears since he blindly believes that this must be a progressive step in road-construction and treads or drives upon the tarred road with pride and satisfaction, not knowing that he is running the risk of being poisoned by the arsenic etc. contained in the crude tar.

Reckless Traffic.

The progressive city of Madras —a city of distances—is not spared from the curse of reckless traffic. The cars, trucks and especially the dare-devil busswala contribute their utmost to plough up the roads and raise a heavy cloud of dust and tar products to vitiate the whole atmosphere far and near,

Drains.

The drains in Madras are really the greatest hindrance to the health and well-being of the city-dweller. Situated as it is on a flat tract at or below the sea-level, the city has drains which cannot discharge their contents freely and quickly to their outlet the Coom or the sea, in consequence of which the sewage water sinks into the soil or has to be pumped out. What is not being removed by the porous soil is, however, being tried to be pumped out through two or three pumping stations which work only during the day and partly discharge their duty. During the night, the drainage water especially in the town part collects itself and emanates that horrible smell familiar to all who pass near the Coom in the early morning hours. Worse still, it vitiates the air and infects us just while we are asleep. The open drains are sufficiently bad in

themselves, but by an "expert's" advice, crores of rupees have been sunk in converting the open drains into closed and underground ones to make the situation almost hopeless. The mosquitoes have now been provided with cosy corners and breeding centres to rest and multiply so as to enable them to fly out only a small distance and enter houses and do there havoc more vigorously during the night. The nuisance of the mosquitoe has therefore ceased to be the nuisance of the Black Town parts that it once was. It has become a general nuisance of the whole city wherever the drains have been closed, so much so that even in parts like Triplicane, where mosquitoes were least or nil, it is impossible to live or rest without being closely covered with mosquitoe bites over the exposed body.

The Coom.

The chief defect with our biggest drain the Coom, is that it cannot empty its contents into the sea. It is however strange that experts who invested crores of rupees to cover up drains left this Jordan of Madras to take care of itself and mar the health and beauty of our city. Unless and until the problem of theCoom is solved,the short-sighted policy of the Health Department to check the mosquitoe nuisance by closing up drains, filling up wells, tanks, cess pools and emptying chettis, tubs, and what not from houses, will prove of little or no avail.

Water supply.

And then the water supply of Madras is quite unique of its kind. In no part of the globe do we find this curious practice, tragic or comic we cannot say, of mixing up filtered or so called pure water with the crude water that comes from miles and miles underground without the purifying influences of natural forces such as sunshine, free air and rain. The crude water though henkinized or chlorinated still contains some germs and obnoxious things (though considered safe) and drunk even for some time acts as an irritant to weak stomachs and bowels, inducing diarrhoea and digestive troubles.

Foods and Foodstuffs supply.

The supply of foods and foodstuffs in Madras is not only inadequate but is also hopelessly adulterated stuff.One has to search in vain in our markets for stuffs pure and wholesome in any line.

Food Adulteration Act.

The Food Adulteration Act is still a dead letter and the officers concerned are merely passing off their terms of office, by simply announcing that they are helpless in the matter of these very important health problems. Good and bad rice are freely mixed by the vendor after receipt in Madras and offered as good and wholesome rice and this cannot easily be detected. Hand pounded (vitamine containing) rice again cannot be had for price or favour since the unscrupulous rice-dealers will cart away all available paddy and mill it, so as to artificially raise or lower the whole-sale prices. Even our co-operative societies have fallowed suit so as to show a margin of profits and their supply is no better than the bazaar's. Hence

it becomes incumbent on the Municipal authorities to run food stores or supervise co-operative stores even subsidizing them if required.

Ghee suqpply.

The ghee,to be had in our city, is again an equally reprehensible article of diet on account of unscrupulours adulteration. Bad enough as it was in pre-war days, the adulteration has become indiscriminate during and after the war owing to the greater demand and free exportation ; so that the pure stuff has become scarce even in villages and remote parts. The ghee-vendor has established agencies in every nook and corner to buy, adulterate, tin and despatch a most horrible stuff, which is at the same time an essential article of diet. Once adulterated sparingly with different vegetable oils, the bazaar-ghee now is a freely mixed stuff of animal fat with little or more ghee, and clearly professes to be no respecter of religious scruples of the consumer, be he Brahmin, Jain, or Mohamedan.

Coffee and Coffee Hotel

The last but not the least important factor in the undermining of the health of the Madrasee is the incessant growth in the number of coffee-hotels and the unscrupulous catering by the coffee-hotel-wala, whose aim is to make a fortune even if it be at the expense of the health of his constituents. In spite of the fact that our Good Templars or temperance workers advocate coffee and tea in place of toddy, the caffein and other poisonous stuffs in coffee are highly poisonous and the habit of taking these decoctions for three or more years would have irritated and charred the secreting surfaces of the stomach and bowels, thereby inhibiting all digestive secretions and abolishing taste for natural food. The highly concentrated decoctions of coffee or tea prepared by boiling them down for hours overnight, the additions of soap-nut or charred sugar are some of the unscrupulous methods adopted to improve the colour or taste of these beverages and hence highly poisonous. Considering the increasing harm done to the public by the dangerous and insanitary practices followed in the coffee-hotels and the indiscriminate variety of foods supplied therein without regard to their nature, purity or quality, it is incumbent upon the authorities to appoint expert doctors to supervise these restaurants periodically without warning once a week, or fortnight or month in order to ensure cleanliness of the place and workers, to insist in their supply of non-deleterious estables and in their using proper and non-injurious food-stuffs.

The Conclusion & object.

Our object in this apparently strict survey of the health conditions of our city is not merely to pick out flaws nor is it to exhaust all the possible remedies that may be suggested to grapple with those conditions. Our aim is principally to direct the attention of the public and the authorities concerned to the many glaring and remediable defects in the working of our city

and to sound a timely note of warning to the heads of the Municipal, Sanitary and Medical Departments to put forth all in their power to render the city of Madras at least habitable, if not quite healthy and happy to live in, for those who cannot afford to have the bracing influence of "Nature Cure" on the Marina.

The Health of Children

WITH SPECIAL REFERENCE TO FOOD AND FEEDING

From a pamphlet issued by the New Zealand Department of Health.

It is especially important to establish, as far as possible, consistency and practical uniformity in the principles taught, countenanced, and put in practice by educational and other authorties having to do with the rearing of children.

Following on a conference of the Directors of the Health Department with the School Medical Officers on the above subject, held on the 8th and 9th September, 1921, a subcommittee consisting of Dr. F. Truby King, Dr. E. H. Wilkins and Mr. T. A. Hunter was appointed for the purpose of drafting recommendations, suggestions and resolutions based on the proceedings, discussions and resolutions of the Conference.

In drawing up its statement the sub-committee has attempted merely to set forth simple, practical guiding principles bearing on prevailing errors in regard to the food and feeding of children beyond infancy. No attempt has been made to traverse the whole field of dietetics and nutrition; the aim has been only to point out briefly the main essentials for improving the health, nutrition and growth of the rising generation, just where people tend to go most astray.

Fats and Oils

In general there is a fair proportion of fat in the average colonial dietary, but it should be emphasised that ample fat in the daily food is specially important in childhood.

On economic grounds, parents and guardians should realise that butter, which is always more or less expensive, has practically no advantages, as regards nutrition and health, over the much cheaper—dripping or suet used in cooking.

Sugars and Starches

While a due proportion of carbohydrates is necessary in the diet, it is of the greatest importance that we should encourage their use as far as possible in their natural associations with other materials (*e. g.*, as occurring in wholemeal, fresh fruit, vegetables, etc.) rather than in the form of the separated, refined, and concentrated flours, starches and sugars of commerce.

There is practical unanimity amongst medical and dental authorities that the present excessive use of manufactured sugar, sweets, chocolates, biscuits, cakes, etc., especially between meals or at bedtime, is the most potent cause of indigestion, malnutrition, and dental disease among children.

The practice of sweet-eating by children between meals should be condemned without reservation as to the quality of the sweets. As a choice of evils no doubt "boiled sweets" are less injurious than soft, sticky sweets such as chocolates, etc., but the common idea that "boiled sweets" are harmless is quite erroneous.

Cereals

Meals which contain the whole of the grain, such as wheatmeal and oatmeal, are better foodstuffs, especially for growing children, than their highly refined products—such as white flour and the more refined oatmeals. Though the other farinaceous foodstuffs in common use, such as cornflour, sago, tapioca, arrowroot, macaroni, etc , are all highly refined artificial products their use may not be sufficiently extensive in the Dominon to be in itself a serious practical consideration. It must be recognised, however, that the modern tendency to extreme refinement of cereal and other farinaceous foodstuffs is a serious mistake; and, in view of the large quantity of bread consumed, the quality of the meal or flour from which bread is made is of the very highest importance. This is apparent from the established nutritive inferioity of polished rice to whole rice, and of white flour to whole meal. Special efforts should therefore be directed by all authorities concerned in the rearing and education of children to promote the more general use of wholemeal bread.

Fruit

The greater use of fruit, especially raw ripe fruit, should be strongly advocated. It should be emphasised that the regular taking of fruit (more or less acid) at the end of each meal, especially at the end of the last meal of the day, is one of the chief means of minimising oral sepsis and thus preventing dental decay and the tendency to tonsilitis, rheumatic fever, etc. Attention should also be drawn to the great importance of uncooked fruit, including tomatoes, as a source of the necessary vitamines, and as conducing to healthy activity throughout the digestive tract and the establishment of normal microbic flora in the intestine.

Of course, we all recognise that fruit should be cheaper, and that much more could and would be produced, both commercially and in home gardens, if people in general recognised its supreme importance for the growing family. In both these directions we may be sure that a great economy would soon be brought about if all medical men, dentists and nurses impressed on the people in their districts the great importance of fresh raw fruit, especially during the period of active growth and development. The cost of fruit should not be considered a serious difficulty in the way of its more general use in the Dominion. In view of the amount of money commonly spent on sweets, the expense of dental treatment, and the much greater expense and loss of efficiency ultimately resulting from untreated dental disease, the greater use of fruit even

at its present high prices would be an actual economy.

Vegetables

A liberal and varied supply of fresh vegetables should be strongly recommended. As green vegetables are especially protective against deficiencies which may occur in the remainder of the diet, this point should be emphasised, and parents should be urged as far as possible to grow some green vegetables in their own gardens. Special importance, of course, attaches to salad materials used in the raw state, such as lettuce, mustard and cress, radish, etc., and the public should be brought to realise the damage done by such common mistakes in cooking vegetables as the use of soda, unnecessary peeling or paring, over-cooking in excess of water etc.

As in the case of fruit, the increased demand which would follow upon a greater appreciation of their food value would no doubt result in an increased production of vegetables and a fall in price.

Tea and Coffee

Tea and coffee being neither good nor necessary beverages, their use should be strongly discouraged in the case of growing children. It is desirable to impress upon parents that both are especially injurious to children on account of their tendency to impair digestion and, as nerve-stimulants, to conduce to nervous instability.

Milk

A consideration of the caloric value and protein ratio of cow's milk, in relation to the total caloric and protein requirements of young children, renders it apparent that a large quantity of milk in the daily diet causes an undue proportion of the child's food to be taken in a liquid or sloppy form, giving no exercise to the jaws, teeth or salivary glands.

It is specially necessary at the present time to insist on the mistake of giving children as much milk as they will drink, because an intemperate "milk cult" has been given undue newspaper prominence of late in a set of rules for children headed "The Health Game." These rules, emanating from New York, were intended for the poor of great cities who can never get enough milk. Copied without explanation into the newspapers of a well-to-do dairying-country. Rule 4 of the American "Health Game"—namely, "Drink as much milk as possible"—is palpably wrong and misleading.

Some of our children are already given too much milk—milk being popularly regarded as a mere drink, rather than as a substantial food. Excess of milk in the diet of children from two years onwards may be as harmful as deficiency. It is well to remind parents who happen to be obsessed with the wrong notion that milk should form a large proportion of the diet in childhood, that in New Zealand (and in many other countries where exceptionally well-built, virile, capable races are evolved) cow's milk never entered into the diet until cows were introduced by Europeans. The milk industry in its present magnitude is a recent development in the history of civilisation.

In reply to the question, "How much milk should a child have

daily ?" it can be stated confidently that for a healthy child, say, from the age of three years, receiving an otherwise satisfactory diet, half a pint (including that which is combined with other foods in cooking) is enough.

Meat

In general the quantity of meat taken daily in colonial families is greatly in excess of the bodily requirements, and is much more than is desirable for health, particularly in the case of children. It is highly desirable, moreover, to impress on the whole community that the popular idea as to meat being specially conducive to the development and fitness of muscle, and to increased strength and vigour, is erroneous.

As proteins are derived from various sources and differ greatly in their nutritive values, it is impossible to give any hard-and-fast figures as to how much meat should be taken—the best daily allowance will vary greatly according to the protein intake in the form of fish, milk, cheese, eggs, legumes, and other foodstuffs with high protein content. Of course, "red meat" need not enter into the diet at all, and many authorities hold that children are better without meat during the first few years of life.

In the case of children partaking of the ordinary food of the ordinary home, an ounce or two of meat per diem would certainly suffice between two and four years of age; and up to, say, six or seven years, three or four ounces would be ample. Very little further increase need be made until the onset of rapid growth during puberty, when between a quarter and a half pound of meat, fish, or fowl per diem would not be excessive, unless high protein were given in other foodstuffs. On the other hand, it must be borne in mind that meat is regarded as having an undesirable stimulating effect upon the sexual and nervous systems of many children, especially during puberty, and that it is better for such children to be given their protein largely in other forms, such as cheese, eggs, milk, legumes, etc.

Preserved Foodstuffs

Jam, tinned milk, tinned meat, tinned fish, etc., tend to be lacking in essential vitamines, and are inferior in nutritive value to fresh foods. The undue and increasing use of "tinned foods" is damaging to health, and should therefore be discouraged.

Mastication

The necessity for vigorous mastication as a vital function cannot be too strongly emphasised, and the diet should consist largely of foods which give due exercise to the parts provided by nature for this purpose—namely, the jaws, teeth, tongue, and salivary glands. Such exercise is not only necessary for the development of these structures, but reacts favourably on the whole digestive tract as well as on the whole organism. This being so, the eating of food such as stale bread, crusts, toast, oven-dried bread, raw apples, lettuce, etc., cannot be too strongly recommended, and soft, sloppy diet too strongly condemned.

Number of Meals

For children from two years of age onwards, three meals a day are ample; no food whatever should be taken between meals; and the habit

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of giving milk, tea, cake, biscuits, sweets, etc., between the regular meals should receive the strongest condemnation. The principle of allowing the stomach time to complete its work on each meal before more food is taken should be the rule for all children, and is of special importance in the case of any child whose health is below par and whose digestive power is consequently impaired. The old maxim "little and often" is a mistake, whether children are well or ill.

Causes of Dental Disease

The modern progressive and alarming increase of dental disease is mainly due to dietetic causes incidental to the great increase of artificial methods of treating and manufacturing foods. An unsuitable diet may act prejudicially in two specially important ways, namely :—

(*a*) By interfering with the nutrition of the teeth in early life, thus diminishing their inherent resistance to decay ;

(*b*) By favouring the lodgment of fermentable carbohydrate food about the teeth, and impairing the natural cleansing action of the saliva.

The chief errors contributing to dental decay are :—

(1) Wrong feeding ; lack of fresh air, outing and exercise ; and other hygienic errors on the part of the expectant and nursing mother.

(2) Neglect of natural feeding in infancy.

(3) Excessive consumption of artificial sugars.

(4) The almost exclusive use of cereal and farinaceous foodstuffs in unduly refined forms—especially foodstuffs consisting of artificial combinations of sugars and starches.

(5) The unnatural frequency and irregular times at which these foods are taken.

(6) The softness of modern foods

(7) Neglect of the use of raw fruit and vegetables.

(8) Tea-drinking.

The Tooth-Brush.

The systematic regular daily use of the toothbrush must be advocated, though no brushing would be needed if the food habits of mother and child were in accord with natural requirements. Without attention to diet mere brushing of the teeth does not and cannot effectively stem dental decay.

Dentifrices.

Every opportunity should be taken to remove the impression in the minds of the general public that the so-called antiseptic preparations can render the mouth aseptic for more than a few minutes. Not only is this impossible, but these preparations for the most part do little if any good, and are injurious to the gums. Abrasive tooth-powders also should be avoided.

As a mouth-wash, plain water, or a solution of salt—half-a-teaspoonful to a tumbler or cup of water—is recommended to be used, more particularly last thing at night, thoroughly rinsing the mouth after brushing.

Tonics

The indiscriminate use of so-called chemical foods and tonics should be deprecated. There is no

doubt in the minds of dental practitioners as to the evil effects of these preparations on the teeth and gums. These medicines should only be used on the order of a medical practitioner, and then only for the limited time prescribed, and with due precautions. The probability of destroying the teeth and the risk of interfering with digestion and nutrition are dangers that the public should be educated to understand.

Dental disease being admittedly the most serious and urgent of all public-health problems, its prevention demands the earnest attention of all those specially responsible for directing and influencing public opinion in such matters. In view of the very grave damage done to the rising generation by faulty food habits, all medical and dental officers, nurses, and school teachers are expected to do their utmost, both by precept and personal example, to inculcate better and more rational habits in regard to food and feeding.

Deficiency Diseases.

Views of Lieut-Col. Mc Carrison, I. M. S., in charge of the Deficiency Diseases Enquiry, Indian Research Fund Association, Pasteur Institute, Coonoor:—

The object of this memorandum is to indicate the great importance of malnutrition as a cause of physical inefficiency and ill-health among the masses in India; the intimate connection which exists between problems of nutrition and those of agriculture, and the necessity for closer co-ordination of nutritional, medical, veterinary and agricultural research in this country.

Of all the disabilities from which the masses in India suffer, malnutrition is perhaps the chief. The more spectacular, endemic and epidemic diseases such as cholera, malaria, dystentery, tuberculosis and leprosy kill their thousands early. But malnutrition claims its millions, and is the means whereby the soil of human body is made ready for the rank and growth of the pathogenic agents of many of those diseases which afflict the Indian people. It has, for example, been shown by researches carried out under the auspices of the Indian Research Fund Association, that dysentery, a common scourge of India, can be produced under experimental conditions in animals, closely related to men merely by feeding them on food deficient in certain substances (vitamins) upon which normal metabolism is dependent. It was found that while well-fed animals might harbour the "entamoeba histolytica" which is the cause of dysentery, they did not develop this malady although living in the same room subject to the same risks of infection as ill-fed animals which, being carriers of this organism at the time the experiment commenced, developed dysentery in consequence, of the lack of resistance to it brought about by the defective food. Similarly, it has been shown that hog-cholera and other infections can be caused to overrun the animal organism by the same means. These

observations have now been confirmed and extended in other countries; and quite recently it has been found that susceptibility to tuberculosis, typhoid fever and pneumonia—all of which are very prevalent in India—is greatly enhanced by the use of food of low biological value which contains an inadequate supply of vitamin A. Investigations of this kind have made it possible to enunciate the rule that many pathogenic agents of disease are capable of exercising their harmful effects only when the human or animal body is debilitated by various means of which imperfect nutrition is the chief. It follows, therefore, that a primary essential in the prevention of such diseases is the adequate nourishment of the human and animal organism. A number of other diseases of a metabolic nature are likewise the result of improper food. Of these it is only necessary to mention scurvy, rickets, beriberi, certain eye-diseases and stone in the bladder, all of which exact an enormous toll in this country.

The effect of imperfect food is causing a degree of physical inefficiency, which may not be associated with any gross evidence of disease, is exemplified in India as in few other countries in the world. For who have travelled far in India can have failed to observe the remarkable difference in physical efficiency of different Indian races; and although there are a number of factors, climatic and other, which play their part in determining these differences, yet it has been shown by researches carried out in this laboratory and by Col. Mc Cay in Calcutta that nutrition is the chief among them. The differences in physical efficiency of different races in India have been definitely correlated with differences in biological value of foods which necessity, habit or religious prejudice has forced them to use. Malnutrition is thus the most far-reaching of the causes of disease in India. It is one of the greatest—if not the greatest—problems with which the investigator of disease is faced. It is too, the chief among the problems facing those engaged in agricultural research. The ultimate aim of both is the same; the adequate nutrition of the people. So far, then, from agricultural and nutritional research being carried out in isolated compartments, there should be the closest co-operation between them, to the mutual advantage of each and to the widening of scientific vision.

It is not alone in regard to the human subject that malnutrition exerts such harmful effects. Man's domestic animals suffer no less than he himself. It suffices in this connection to refer to the effect on cattle of pasturage which is deficient in certain mineral ingredients. As an example of this kind the new well-known effect of deficiency of phosphorus in the soil and therefore in the vegetation on the health of cattle and sheep may be mentioned. Such deficiencies are found in large tracts throughout India as, for instance in the soils or Bihar. In India unfortunately millions of stock exist in a state of semi-starvation. As draught animals they are consequently inefficient, and as producers of milk and milk products—so essential as food for mankind—they are more inefficient still. There is, perhaps, no more important department of agricultural

and nutritional research than that which deals with animal husbandry; and here I should like to emphasise that the problems of animal husbandry are also the problems of human husbandry.

Human and animal ineffieiency is reflected in the soil; in imperfect cultivation, in inadequate manuring and in crops scanty, as to quantity and deficient as to quality. Too few animals are kept by the cultivator, as the scanty vegetation cannot support them; and so there is returned to the land too little of organic matter, in the form of farm yard manure on which the continued fertility of the soil is so dependent. It has been shown in regard to plants as in regard to animals that they cannot thrive nor their seed attain to the fullest reproductive quality unless they be provided in addition to the mineral constituents of their food, with certain organic substances known as "auximones." These substances which are skin to vitamins, are as essential to the normal metabolism of man and animals. They not only enable the plant to build up from the simple ingredients derived from the soil those organic complexes required as food by men and animals, but they enable it to elaborate vitamins without which these organic complexes cannot be be properly utilised by animal organism. Auximones are produced in the soil from decaying organic matter by the action of certain soil bacteria; and the best organic matter for this purpose is farm yard manure. So it is that such disabilities of mankind as are due to faulty nutrition are sometimes traceable to the soil itself, which has become exhausted and unproductive of the best kind of food through improper attention and cultivation. Mal-nutrition thus pursues its harmful course in an over-widening vicious circle; the cultivator is too often ill-nourished and ravaged by disease which is commonly the result of his ill-nourishment; his beasts are alike ill-nourished, while both toil wearily in a heartless effect to extract from the ill-nourished earth enough to keep them from starvation. The solution of the problem of malnutrition is thus, to a great extent, one of improvement in methods of agriculture.

Having dealt with the soil conditions, the memorandum states the following as not the least among the manifold needs of India at the present time:—

(a) the wide extension of research on nutrition—plant nutrition, animal nutrition and human nutrition —under broad-minded direction. These are not different subjects but the same subject; a continued story following story following a natural and ordered sequence from its beginning with the soil, through vegetable and animal life to its final stage in the man itself. In the telling of this story India should be encouraged to play an adequate part. My experience of Indian assistants has taught me that nutritional research is of a kind which appeals to the Indian possessed of the necessary scientific education. For my part I would desire to see many such young Indians trained in its prosecution and engaged upon it under proper direction.

(b) A second need is the co-ordination of all the forms of research—nutritional, medical, veterinary and agricultural-which have for their aim the betterment of the health and physical efficiency of the people of India. It is essential that those who are engaged in agricultural research should be aware of its bearings on public health or *vice versa*. At the present time much effort is dissipated for want of such co-operation between research workers. The matter is, however beset with many difficulties. I mention it merely to indicate its importance,

It is, I believe, Lt. Col. McCarrison concluded, only by the extension of research along broad lines by its proper co-ordination and by the employment of the best brains which India can herself provide that their country will obtain the highest return for money expended upon research.

Oral Evidence

Replying to the Chairman of the Commission, Col. Mc Carrison said that he was the only officer engaged in research or nutrition and if he left this country to-morrow, there would be none to carry on his work. It was necessary and important that this work should be put in a firm basis. An institute ought to be established an institute at which the problems of man, animal and plant would be studied.

Q:Do you suggest that the Government of India should run the Institute or the Provincial Governments?

A: There is room for such an institute in every presidency in this country. There is also room for a central institute under the Government of India.

Q: Is it your view that Coonoor is the proper place for carrying on the work?

A: It is an ideal place.

Asked to give an outline of the work carried on in the Institute, Col. Mc Carrison said in his laboratory he did not deal with the problem of starvation or semi-starvation which he doubtless recognised as being also an important source of malnutrition. He dealt solely with the quality of food in common use in this country and its capacity to function as food. The function of food was three or four fold: to repair the waste, to supply energy, to maintain the normal medium in which chemical process of the body could take place and finally to sustain life His enquiry had chiefly consisted with what was called vitamin, a substance which could be compared to a spark without which an engine run by petrol could not be started.

Rice, the chief food in this presidency, afforded fundamentally a poor diet, a diet which in itself would not support the human body, although people who were using it might be eating in large quantities. Rice was of very poor biological value. Leprosy which was a disease of mal-nutrition was largely among people who ate rice. It was also true of many other diseases. The death-rate from cholera among rice-eating population of this presidency was 40 times more than that of Punjab where the staple food was wheat. Intestinal diseases were the chief among the diseases caused by deficiency in diet. Last year in this presidency there were no less 9,500,000 people who attended hospitals and dispensaries for treatment of those diseases;

of these 3,000,000 could be said to be suffering from them due directly or indirectly to mal-nutrition.

Witness by means of charts drawn as a result of experiments showed the very low nutritive value of rice and white flour and contrasted it with the high nutritive of wheat. He said that besides the fundamental poverty of food contents of rice, from the field it was subjected to all sorts of milling and polishing process by which even the little nutritive value it had was taken away.

In reply to Prof. Ganguli, Col. Mc Carrison said that polished rice alone would be quite incapable of ensuring health, unless it was supplemented by other articles of diet.

Answering, Sir Gangaram, witness said that European countries were not better. In fact they were very much worse than this country in regard to food.

Proceeding witness said that no man could live on rice alone as no man could live on bread alone.

Sir Henry Lawrence: Is nutrition research carried on in similar lines in Europe?—There are at least four or five centres in England, alone the population of which is not even a sixth of this country.

Mr. Kamath: Are not the Japanese also doing this?—Yes.

Sir Henry Lawrence: Even United States of America?—Yes; I was much impressed with the work carried in this country when I was there.

Is there sufficiency of milk?—I hould be guarded in my answer because my work has chiefly been in the laboratory. But I think the people have not nearly enough milk, except of course some of the better classes of people.

One of the great problems in India is to secure sufficient milk in those provinces where it is not at present available?—Yes.

Sir Henry Lawrence: Any section of the population suffering from half-starvation and mal-nutrition would be deficient in the power of reproduction?—Not so. It would depend on the aspect in which their food is deficient. In order to produce that effect, Vitamin E must be absent from the food taken. But in rice there is a good proportion of Vitamin E.

So you would combine the power of generation with excessive condition of starvation in the rice-eating population?—I cannot answer the question; because I have not carried on any enquiry in that matter.

It might be the possible result?—Not excessive power, but very little impaired capacity for reproduction.

We are finding that at the present day there is excessive power of generation from the C 3 population?—Yes. But I have not formed conclusions by experiments.

Sir Ganga Ram: Has the nature of food anything to do with the disparity in the male and female births?—I have not studied the question.

In the Punjab, for instance, the male population is much more than the female?—I cannot answer the question; but I can say that the members of the Commission from

the nature of the questions put to me are extremely interested in this question of nutrition.

You say calcium and phosphorus for cattle. Would gypsum be of use in any form?—I have to refer you to the veterinay people for information on that point.

What about manganese?—It is very widely distributed in nature. It occurred in cabbage leaves, turnips, oranges, lemon and strawberry. Whole wheat is particularly rich in this mineral.

Diabetes is a very common disease in this country. It may be possible that further study of the relation of manganese with the functional defect of the pancreas may throw some light on the cause of diabetes.

Can deficiency in iodine be made up by the use of any specific vegetable?— It is curious that many of these minerals are found in a plentiful proportion in green leaves and vegetables.

Boiled or unboiled?—It does not matter boiled or unboiled; but it is better to let them in a raw state.

Sir Thomas Middleton: You say that in connection with live-stock in this country much more work could be done on minerals than on vitamins.

Answering further questions of Sir Thomas, witnes said that the energetic value of wheat and rice was the same but the nutritive value of wheat was far greater than rice. It must also be said that one cannot live on wheat alone; milk products must be taken with it, in order to get the natural balance.

Replying to Dr. Hyder, witness said that he was hopeful as regards the future in the matter of carrying on the research work. Such Indians who had served with him in this work, he was hopeful, would be able to carry on the work.

Dr, Hyder asked if the deterioration in health among the present-day educated Indians and the incidence of disease was not due to the fact that they are adopting European ways of living in the matter of drinks (aerated waters) and diet (polished rice and so on). Witness said that members of the Commission were suggesting other directions of research than the one he was now engaged. If facilities were given the research could proceed in those directions as well.

That is my experience as a teacher in a University in the north. I was wondering whether the growing deterioration in health of the students was not due to their adoption of European ways to some extent?—That is one of the things which I shall be very happy to ascertain for you if you can provide for me nutrition* (Laughter.)

In answer to Mr. Calvert, witness said that if people persisted in eating white flour and polished rice they would be doing themselves great injury. Milk was a very important item in diet.

But in China, Japan, Burma and in other Buddhist countries, milk is not part of the diet at all. How do you reconcile that with your statement?—Japanese obviously do not receive enough protein; otherwise they would be taller and bigger people.

Dr. Hyder: Have you ever seen a tall Japanese or Chinese? (Laughter.)

Witness: I have never been to China or Japan.

Hygiene in Schools

Views of Major A. J. H. Russell, M.A., M.D. B. Ch. P.H.D.T.M., I.M.S., Director of Public Health, Madras:—

The time has now come when the subject of "Hygiene" should be included in the curiculum of all schools and colleges. The subject should not be optional but should be made compulsory. This question has been referred to in para 20 of the memorandum already submitted where it has been pointed out that "if general education is an affair of the State so much the more is education in matters of health." The old belief that Public Health deals only with "drains" and "bad smells" is not yet dead, and is even to-day one of the greatest stumbling blocks to all advance in its development. The Education department should recognise that its efforts to educate will be largely frustrated if those they desire to educate are devitalised by infection and so prone to sickness that they are frequently absent from school or college. School children ought to have laid before them the elements of the principles of healthy living and be compelled,—at least in school hours,—to practise these principles. This implies that school and college teachers shoud themselves understand what is meant by modern Hygiene. The subject must, therefore, be included in the curriculum for all training colleges for teachers,and must be taught in such a way as to indicate its very close association with the daily life of the individual, the family and the community. With teachers so trained, the children might be expected to learn sufficient facts about life, health and sickness as to convince them of the advantages of practising healthy living. Their knowledge would also almost certainly be carried to their homes. The Educational Department has at present sanitary rules in force compelling all aided schools, for example, to provide and maintain suitable latrines, but it is rather the exception than the rule to find these. As a result the chidren never realise the dangers of soil, pollution and the benefits to be derived from decent sanitary conditions. If the teaching of hygiene were made compulsory a beginning would be made, and the next generation would realise the consequences of the present indifference to, and neglect of, hygienic living.

In the same connection may be urged the necessity for a new outlook on the subject of "Hygiene" as met with in the currimulu of Medical Colleges and Medical Schools. The medical student at present is taught in water-tight compartments and especially is this so in connection with the subject of "Public Health." In the words of the Gencral Medical Council's resolution of January 1923. it is necessary "that throughout the whole period of study the attention of the student should be directed by his teachers to the importance of the preventive aspects of medicine." Every student must be made to see the inter-relationship and close correlation between the healthy man and healthy life on the one hand, and biology, physiology, pathology, medicine, midwifery and surgery on the other. These subjects

should be so presented as, to impress on the student the importance of keeping people healthy, of recognizing early symptoms of disease and of instructing his patients how to avoid future invalidism and disease. With a medical profession trained to take this new outlook, the prescription and the "bottle of medicine" would be pushed into the background, and the medical practitioner's time would be largely spent in teaching people maintain health and how to practise healthy living By. educating future medical practitioners on these lines it is reasonable to hope that the gospel of health would be preached by real disciples of the faith and that this gospel would be accepted by the mass of the people.

This question has been dealt with in the memorandum already submitted, but to the subjects already mentioned there may be added that of nutrition and deficiency Diseases. The importance of Nutrition has no doubt been laid before the Commission by Col. Mc Carrison, but special emphasis should be laid on the desirability of widely-conducted investigations in connection with deficiency diseases which are so commonly met with in this presidency. Large numbers of people suffer from diseases such as beriberi and keratomalacia. The high sickness and death rates from what are called "Intestinal Diseases" are largely caused by deficiencies of one kind or another in regard to food and nutrition. It has now been proved that a high incidence of malaria, and particularly epidemic malaria, is intimately associated with defective nutrition. Recent opinion has also stressed the importance of faulty nutrition as a predisposing cause of leprosy, another widely prevalent disease. Finally there is no doubt that a large proportion of infantile deaths have malnutrition as their root cause.

These, and other isolated facts at present available, point so definitely to the close relationship which defective nutrition and deficiency have with disease, and the subject is so intimately connected with food production and agricultural research, that investigation of these matters would seem to be of urgent importance in connection with the welfare of rural populations in India.

What is required is a Nutritional Institute, with a Superintendent in charge, and several highly trained assistants, so that both laboratory investigations and field work may be conducted simultaneously. The population of this presidency is to near the asymptotic maximum and is increasing so much more rapidly that the available food grain supplies that in my opinion it would be much more advantageous to finance a Nutritional Department than to spend huge sums on new irrigation schemes.

The Nutritional Institute would have for its objects:—

(1) The study of Nutrition.

(2) The study of deficiency disease.

(3) The study of ill-defined pathological states (far more numerous of greater importance and less

understood than typical deficiency diseases) due to insufficiency of any food constituent. These are at present all aguely labelled "malnutrition."

(4) The study of the relation between malnutrition and susceptibility to infection.

(5) The study of substitute foods and their preparation int palatable form— *e.g.*, during times of famine.

(6) The issue of literature--simple and convincing—on what to eat, how to eat, and methods of cooking.

With reference to paragraph 29 (v) of the memorandum already submitted, further details are perhaps desirable. One of the most difficult health problems in India is the prevalence of intestinal diseases. A certain amount of resarch work has been done within the last 3-4 years in this presidency in connection with the "Epidemiology of Cholera," but qualified workers are few and far between, and routine duties occupy so much of the time of those who are sufficiently interested to attempt investigation, that progress is painfully slow. What is wanted in Madras is a number of Public Health laboratories dotted over the presidency staffed with workers who would undertake field surveys in addition to their ordinary duties. We want to enquire into the etiology of parasitic infections and carry out continued research into the problems associated with cholera,* the enteric fevers, the dysenteries, and diarrhoeas, all of which cause a large number of deaths annually. The King Institute, founded over 20 years ago, is unable to cope with the work and even with increased staff, it would be impossible for one central institution to do so. The investigation units sanctioned by Government 2—3 years ago have shown the amount of investigation ready to hand, and the demand for their services has steadily increased. The time has come when the presidency should have a number of Public Health laboratory centres, say one for each group of 4-5 districts to commence with. The officers in charge would have to be well trained medical research workers, if successful results were to be obtained. These central laboratories would be of the greatest assistance not only to the whole Public Health Department and to such local bodies as were sufficiently interested in effecting improvements in the health of the people, but would be able to render valuable aid to other Government Departments.

Replying to the President, Major Russel said that the subject of hygiene was not taught as a compulsory subject in schools.

Q: You have formed the view that teaching in this direction would be received by the children with interest and attention and it would conduce to better public health in the long run?

A: Yes.

In answer to Prof. Ganguli, witness said that the Public Health Department was of a very recent growth in this Presidency and this department needed to be strongly centralised. What he meant by centralisation was there ought to be Public Health Act for the whole

country which the Government must be in a position to enforce.

In reply to Mr. Calvert, Major Russel said that adult education on health and hygiene was not as important as education of children on that subject. He had no doubt it was a practical proposition and a great deal could be done in schools. He would subsidise local practitioners for purposes of propaganda but the work to a large extent depended on the personality of the medical men. There was always the difficulty of getting the right type of person. He would urge on more funds being spent on prevention than cure. Far too much had been spent in building fine hospitals and dispensaries. In the matter of prevention of disease India should fall more into line with other countries.

Sir Thomas Middleton: Do you think that among agriculturists many are under-fed?

Witness: I suppose so, due to poverty and lack of knowledge as to diet.

Q: The primary cause of deficiency is poverty?

A: I would not subscribe to that proposition.

Q: Will not better irrigation be the means of increasing the wealth of the land and the resources of the ryot?

A: It will give more food-grains; but how it will benefit the ryot I do not know.

Q: The ryot will also get the benefit of the increase in the food grains?

A: Very doubtful, judging by what has happened in Tanjore, where the mirasidar would leave very little to the tenant.

Q: Do you think that the diet in the south lends itself to disease and malnutrition?

A: Yes.

Sir Ganga Ram: You could advise the Agricultural Department to introduce wheat instead of rice. (Loud laughter.)

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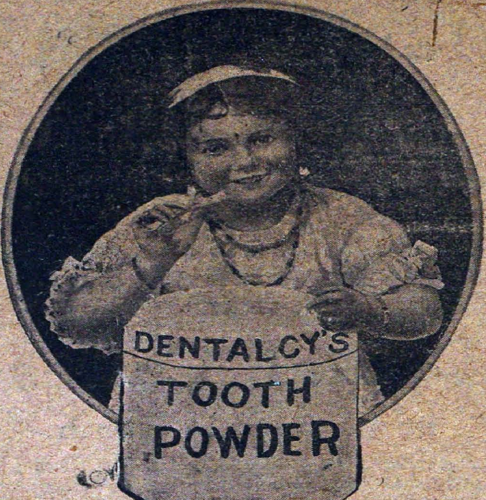

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